

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Date of mailing  
(day/month/year) 12.07.2004

Applicant's or agent's file reference  
77758 BC/AnP

## IMPORTANT NOTIFICATION

International application No.  
PCT/DK 03/00461

International filing date (day/month/year)  
02.07.2003

Priority date (day/month/year)  
02.07.2002

Applicant  
CP KELCO APS et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

## 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/I/B/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the International  
preliminary examining authority:



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**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

|  |  |  |   |
|--|--|--|---|
| Applicant's or agent's file reference<br>77758 BC/AnP  | <b>FOR FURTHER ACTION</b>                                |  | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No.<br>PCT/DK 03/00461   | International filing date (day/month/year)<br>02.07.2003 | Priority date (day/month/year)<br>02.07.2002 |   |
| International Patent Classification (IPC) or both national classification and IPC<br>C08B37/00 |  |  |   |
| Applicant<br>CP KELCO APS et al.   |  |  |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of sheets.
3. This report contains indications relating to the following items:
- I  Basis of the opinion
  - II  Priority
  - III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV  Lack of unity of invention
  - V  Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI  Certain documents cited
  - VII  Certain defects in the international application
  - VIII  Certain observations on the international application

|  |  |
|--|--|
| Date of submission of the demand<br>28.01.2004   | Date of completion of this report<br>12.07.2004                      |
| Name and mailing address of the international preliminary examining authority:<br><br><br>European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized Officer<br><br>Gerber, M<br>Telephone No +49 89 2399-8528 |



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/DK 03/00461

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-3, 5-18, 20-33, 38-42                   as originally filed  
4, 19, 34-37                                 filed with telefax on 04.09.2003

**Claims, Numbers**

1-26   as originally filed

**Drawings, Sheets**

1/4-4/4   filed with telefax on 04.09.2003

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description,      pages:
- the claims,           Nos.:
- the drawings,        sheets:

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5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

|                     |      |        |             |
|---------------------|------|--------|-------------|
| Novelty (N)         | Yes: | Claims | 10-26       |
|                     | No:  | Claims | 1-9         |
| Inventive step (IS) | Yes: | Claims | 11          |
|                     | No:  | Claims | 1-10, 12-26 |

|                               |      |        |      |
|-------------------------------|------|--------|------|
| Industrial applicability (IA) | Yes: | Claims | 1-26 |
|                               | No:  | Claims |      |

2. Citations and explanations

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

- D1:** US-A-3 636 097 (HARVEY WILLIAM R) 18 January 1972
- D2:** WO 99 37685 A (CHRISTENSEN STEEN HOEJGAARD ; MARR BEINTA UNNI (DK) ; HERCULES INC () 29 July 1999
- D3:** DE 100 57 976 A (SUEDZUCKER AG) 29 May 2002

The document **D4:** US-A-4 065 614 was not cited in the international search report.

**1. Novelty**

**1.1.** D1 is novelty-destroying for the subject-matter of **claims 1-6** (Article 33(2) PCT).

This document discloses the de-esterification of pectin with a pectinase followed by an acidification step to pH 1 (see claim 1).

Even if the acid treatment is aimed at the precipitation of the pectin, it cannot be excluded that de-esterification occurs simultaneously. The Applicant failed to define the degree of de-esterification achieved in the step following the enzymatic hydrolysis, so that even a slight de-esterification is sufficient to anticipate the claimed acid hydrolysis step. Claim 1 does not specify the amount of time necessary for the acid to de-esterify the de-esterified pectin, and thus the argument that D1 does not mention the period of time necessary for the acid treatment is not pertinent.

**1.2.** D2 anticipates the subject-matter of **claims 1-9** (Article 33(2) PCT).

D2 is directed to the obtention of pectins with a low degree of esterification, i.e. exhibiting a degree of esterification of lower than 20, preferably lower than 10, especially lower than 5, which are heat-stable and therefore suitable as gelling agent for the manufacture of foodstuffs like jam, jellies and fillings for pies. The reduction of the degree of esterification is achieved by the combination of an acid treatment, an alkali treatment and an enzymatic treatment by means of pectin methyl esterase (see claim 7).

No mention is made in claim 1 of the molecular weight of the product and thus no

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distinction can be made between a high and a low molecular weight pectin. The process and the starting material are identical, so that the product thus achieved must be the same. Should this not be the case, there must be an essential feature missing. It should further be noted that the use made of the pectin in D2 in jam and jelly is the same as claimed so that it is doubtful whether the gelling ability of the resulting pectin is impaired in D2.

**1.3.** D3 also takes away the novelty of **claims 1-9** (Article 33(2) PCT) since it deals with the hydrolysis of pectin with pectin methyl esterase (E.C. 3.1.1.11) (see [0005]-[0011]) under acidic conditions (see [0016]).

It is not clear from the wording of claim 1 whether the acid treatment step is performed simultaneously or subsequently to the enzymatic hydrolysis in order to achieve a higher degree of de-esterification. The process of D3 is therefore considered as novelty-destroying.

**1.4.** The subject-matter of **claims 10-26** is novel over the available state of the art.

**2. Inventive step**

D4 is considered to represent the closest state of the art.

**2.1.** It is not at present clear which technical problem is solved in a surprising manner by the subject-matter of claim 10.

It seems that the crux of the invention is the obtention of amidated de-esterified pectins obtained by de-esterification **using pectin methyl esterase followed by acid or alkali treatment**, and finally amidation with ammonia.

The examples provided by the Applicant are however not in accordance with the claimed subject-matter. In example 2, the amidation of **both** an enzymatic and acid/alkali de-esterified pectin is not described. In example 1, which is directed to biocatalyst de-esterification, the acid/alkali treatment is omitted. The examples provided do therefore not prove the existence of an effect over the prior art.

The combination of D4 and D2, claim 7, would be regarded by the person skilled in the art as a common design procedure.

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The subject-matter of **claims 10 and 12-26** is therefore considered obvious (Article 33(3) PCT).

**2.2.** As far as the subject-matter of claim 11 is concerned, the technical problem to be solved consists in providing a process for making amidated low-ester pectins exhibiting an intrinsic viscosity of no more than 25% below that of the starting de-esterified pectin in order to get an interesting gel strength for the gels made thereof.

Table 2.2. show that this problem is satisfactorily solved by the claimed process.

Starting from D4 in combination with D2, it would not have been obvious to the skilled person to first de-esterify pectin with a bio-catalyst to achieve the above-mentioned effect. As shown in table 2.1., the de-esterification by chemical means only would not have led to the same effect.

The subject-matter of **claim 11** is therefore considered inventive (Article 33(3) PCT).

**3. Industrial applicability**

The subject-matter of present **claims 1-26** appears to comply with the requirements of industrial applicability as stipulated in Article 33(4) PCT.